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CHARACTERISTICS OF THE SPORT FISHERY OF THE NORTH BRANCH OF THE PIKE RIVER, MARINETTE COUNTY, WISCONSIN, 1977

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ABSTRACT

A random stratified creel census was conducted on a 0.7-mile stretch of the North Branch of the Pike River, Marinette County, Wisconsin, during the 1977 trout fishing season.

Fishing pressure during the season was estimated at 633 hours or 203 angler hours/acre. This is comparable to reported estimates of fishing pressure on other Wisconsin trout streams.

During the season, 163 trout were harvested; 101 were brook trout and 62 were brown trout.

Over half of the anglers came more than 50 miles to fish this section of the North Branch of the Pike River.

Based on spring and fall estimates of the trout population in the study section (3,916 trout/mile and 1,207 trout/mile for the spring and fall, respectively), the population did not seem to be overexploited.

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TABLE 1. Physical and chemical characteristics of the study section on the North Branch of the Pike River in Marinette County, Wisconsin, 1977.

Parameter	
Length of study zone	3,700 ft
Surface area	3.12 acres
Average width	36.7 ft
Average depth	0.6 ft
Average discharge	25-30 cfs
pH	7.7
Conductivity	267 µmhos/cm @ 25 C
Alkalinity	107 mg/l

The North Branch of the Pike River has hard, slightly alkaline water which is lightly stained (Table 1). Summer water temperatures in the study section were warmer than any other portion of the stream. This was probably due to two impoundments located in the headwaters. The average daily maximum temperature during the summer of 1977 was 71 F, with a high of 80 F.

In addition to brook and brown trout -- mottled sculpin, white suckers, common shiners, blacknose dace and yellow bullheads are present but not particularly abundant in this section of the North Branch.

Aquatic vegetation is scarce throughout this portion of stream, although there are a few scattered beds of Elodea and Vallesneria.

METHODS

Estimates of the trout population in the study section of the North Branch of the Pike River were made in the spring of 1977, immediately before the start of the fishing season, and again in the fall of 1977, after the fishing season closed. A 220V D.C. streamshocker (Novotny and Priegel 1971) was used to capture the trout. One run was made through the study section and all trout captured were measured to the nearest 0.1 inch and weighed to the nearest 0.002 lb. These fish were identified by clipping off a portion of the caudal fin before release. A second run was made through the study section two days later and all trout captured were again measured to the nearest 0.1 inch and checked for recapture marks. The number of trout in each half-inch group was estimated using the Bailey modification of the Peterson mark and recapture formula (Ricker 1958).

Fingerling trout were also collected, measured and weighed in the fall; however, because of the inefficiency of capture gear on these small fish they were not included in the population estimates.

A creel census was conducted on the study section of the North Branch of the Pike River during the 1977 trout season. The season began 7 May and ran to 30 September. The bag limit was 5 brook and brown trout in combination per day during the month of May and 10 trout per day from June through September.

The methods used in the creel census followed those described for a random stratified census by Lambou (1961). The 1977 trout fishing season was 147 days long and the census was conducted on 105 of these days. Holidays were considered the same as weekend days. Fifty-two percent of the weekends were sampled and 29% of the weekdays were sampled.

A census clerk counted anglers' cars by driving the road that parallels the study area. Between these counts, the clerk interviewed as many anglers as possible for information such as the number in the party; number, size and species of fish caught; bait used; length of fishing trip; and angler residence. All fish creeled were measured to the nearest 0.1 inch.

TABLE 2. Angler harvest of trout from the study section of the North Branch of the Pike River, Wisconsin, 1977.

	Harvest			Yield		
Species	No.	No./Mile	No./Acre	Lb	Lb/Mile	Lb/Acre
Brook trout	101.0	144.0	32.0	13.5	19.3	4.3
Brown trout	62.0	89.0	20.0	16.2	23.1	5.2
Total	163.0	233.0	52.0	29.7	42.4	9.5

Angler Characteristics

Harvest and catch rates for trout on the North Branch of the Pike River were figured separately for opening weekend and the remainder of the season (Table 3). Although catch and harvest rates were identical for opening weekend, during the remainder of the season only half of the trout that were caught were kept. Outside of opening weekend when the catch rates for brook and brown trout were both 0.21 trout/hour, catch rates varied little between brook and brown trout.

Based on information from completed trips only, 28% of the anglers caught at least one trout and 22% kept at least one trout per fishing trip. Only 13% of the anglers kept two or more trout per trip and no angler interviewed took home the limit.

TABLE 3. Harvest and catch rates for trout on the study section of the North Branch of the Pike River, 1977.

	Brook Trout		Brown Trout		Total	
	Catch Rate (trout/hr)	Harvest Rate* (trout/hr)	Catch Rate (trout/hr)	Harvest Rate (trout/hr)	Catch Rate (trout/hr)	Harvest Rate (trout/hr)
Opening weekend	0.21	0.21	0.07	0.07	0.28	0.28
Remainder of season	0.25	0.12	0.27	0.12	0.52	0.24

*Legal-size trout that anglers kept.

Only 10 of the 122 anglers interviewed during the 1977 creel census were considered to be local anglers, residing within 25 miles of the stream (Fig. 5). Over half of the anglers came more than 50 miles from their homes to fish the North Branch. About 95% of the anglers interviewed were males, 5% of the anglers were under 16 years old, and 3% were over the age of 65.

Bait anglers accounted for 87% of the fishing on the North Branch during the 1977 season, while only 4% of the anglers used flies.

Trout Populations

There were an estimated 2,734 trout in the study section of the North Branch of the Pike River in the spring of 1977 (3,916 trout/mile or 51 lb/acre) (Table 4). These estimates include only age I or older trout. Fingerlings were too small to capture at the early time of the census. Only 10% of the trout population were of legal size, 6 inches or larger (Figs. 6, 7). Scales were not taken from any of these fish and there was too much overlap in the growth of the age classes to determine age by length frequencies. The largest brown trout taken in the spring was 18 inches and the largest brook trout 10.9 inches.

There were an estimated 845 trout, age I and older, in the study section in October 1977. Large numbers of brook and brown trout fingerlings were also present in October; however, there were not enough marked fingerlings recaptured to make a valid estimate. Although the biomass (lb) of trout in the spring was nearly identical to that of the fall, there were only about one-third as many fish present in the fall estimate (Table 4). While more than 60% of the brown trout were 6 inches or longer in the fall estimate, only 27% of the brook trout had attained legal size by fall (Figs. 8, 9). Some of this difference may be attributed to an upstream movement of the brown trout (into the study section) associated with spawning. The largest brown trout taken in the fall was 20.5 inches and the largest brook trout was 12.5 inches.

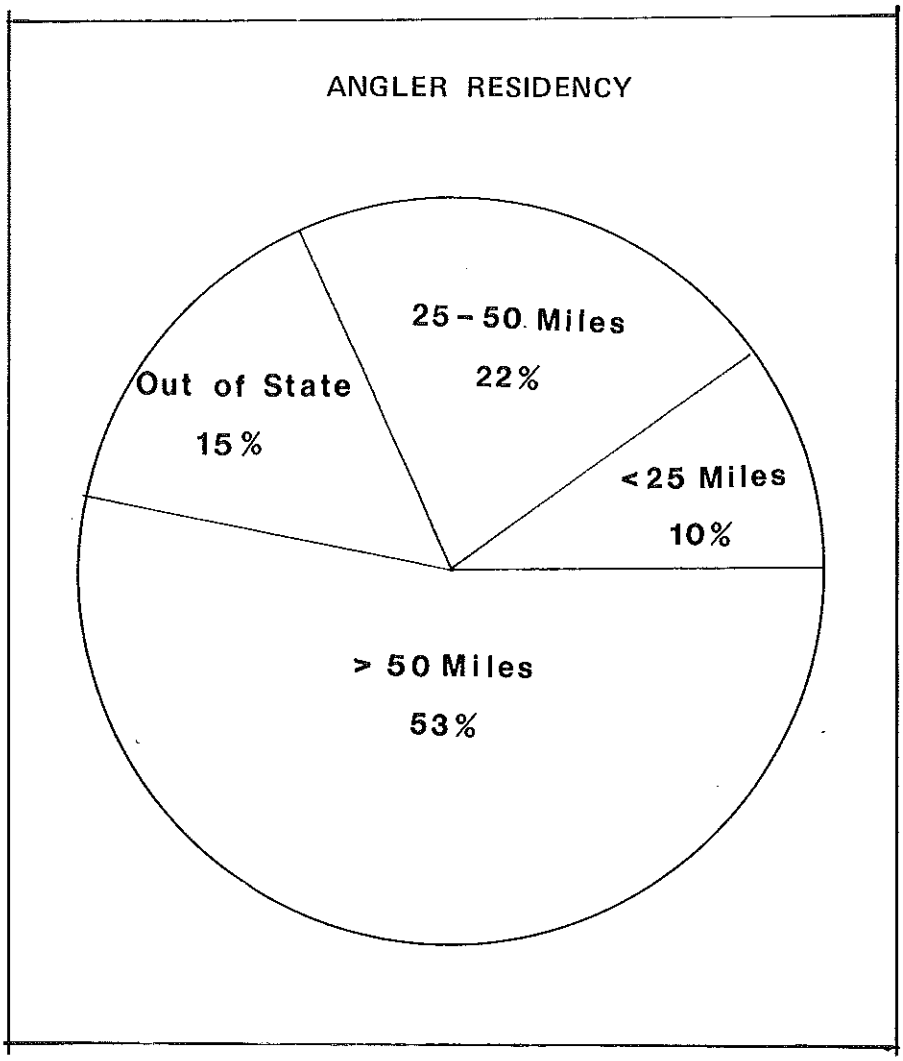

FIGURE 5. Distance that anglers traveled to fish the study section on the North Branch of the Pike River in 1977.

TABLE 4. Trout populations in the study section of the North Branch of the Pike River, spring 1977 and fall 1977.

Species	Density		Biomass (lb/acre)
	Trout/Mile	Trout/Acre	
Brook trout			
Spring 1977	1,510	339	16
Fall 1977	227	51	3
Brown trout			
Spring 1977	2,406	540	35
Fall 1977	980	220	43
Total			
Spring 1977	3,916	879	51
Fall 1977	1,207	271	46

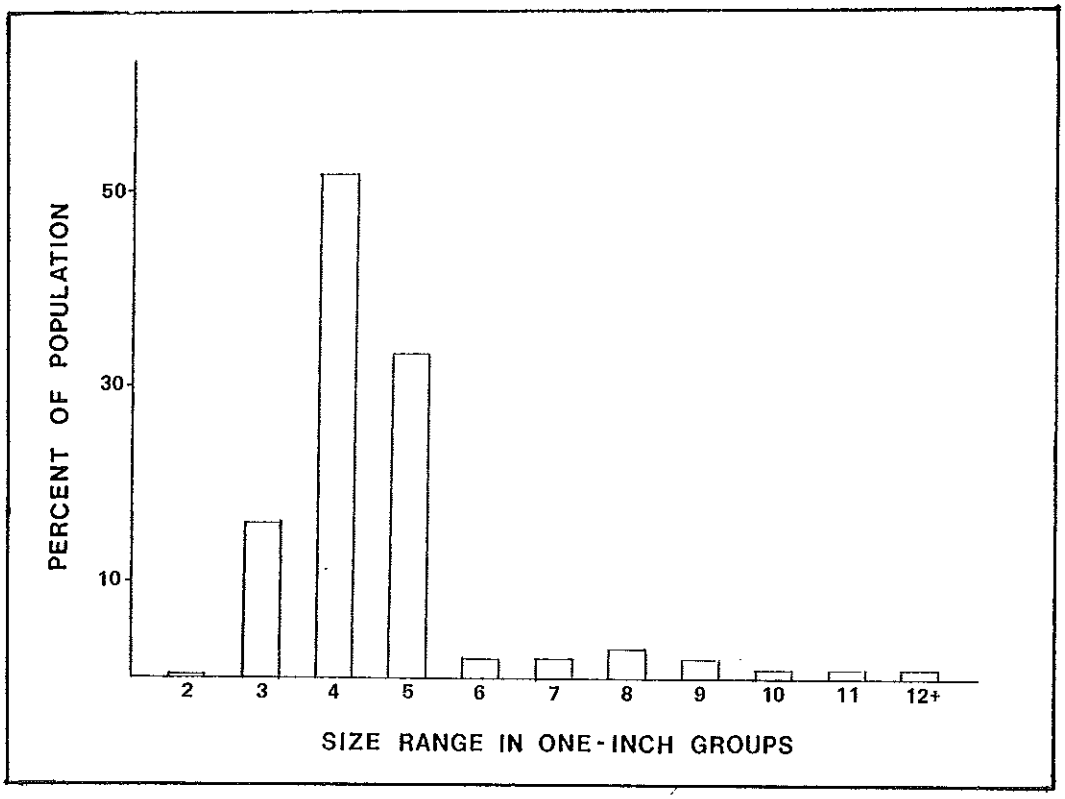

FIGURE 8. Length frequency of the brown trout population in the study area of the North Branch of the Pike River, fall 1977 (sample based on 686 fish).

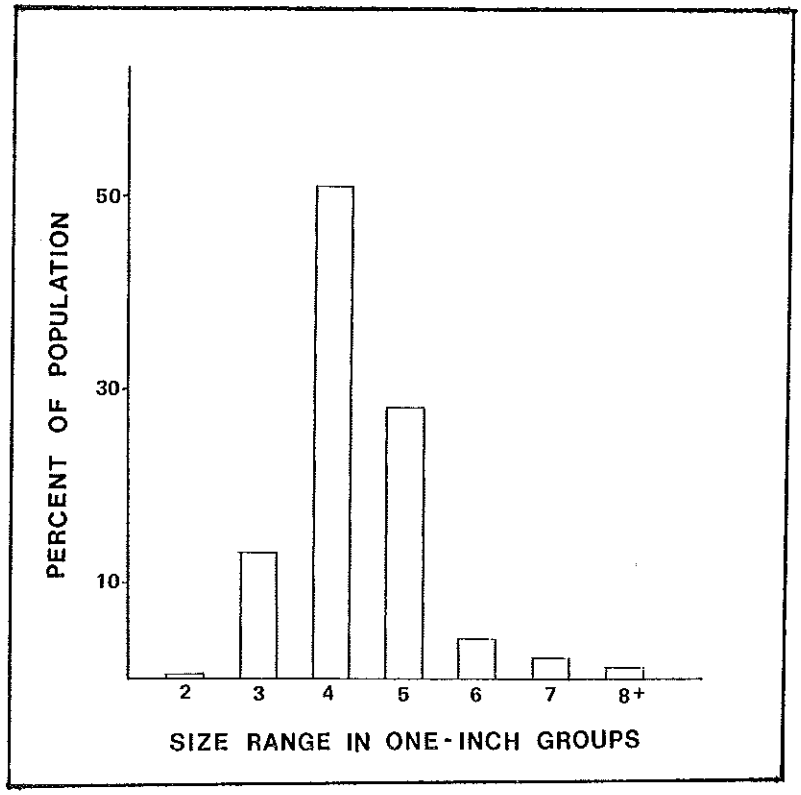

FIGURE 9. Length frequency of the brook trout population in the study area of the North Branch of the Pike River, fall 1977 (sample based on 159 fish).

The density of the spring trout population in the North Branch of the Pike was as high if not higher than that reported for other Wisconsin streams (Table 6). The size ranges of brown trout on the North Branch of the Pike can be compared to those of brown trout in four central Wisconsin streams (Table 7). The large number of browns smaller than 6 inches in the North Branch of the Pike indicates the slower growth of brown trout in northern Wisconsin. However, the number of brown trout per mile over 12 inches in length is greater in the Pike than in the central Wisconsin streams. While trout in the lower reaches of the North Branch have faster growth rates than those in the study section, the population is not as dense as the population of the study section in the Pike's headwaters.

The spring brook trout population in the North Branch of the Pike River is compared to two other Marinette County streams in Table 8. The density of brook trout was higher in the study section on the Pike than in other streams; however, the number of larger size brooks (>9 inches) was fewer.

TABLE 6. Spring estimates of trout populations on selected Wisconsin trout streams.

Stream and Species	Density (trout/mile)	Biomass (lb/mile)	Reference
North Branch Pike River			Present study
Brown trout	2,406	156	
Brook trout	1,510	71	
Total	3,916	227	
Race Branch			Hunt 1981
Brown trout	3,110	737	
Rainbow trout	268	43	
Total	3,378	780	
Willow Branch			Hunt 1981
Brown trout	1,840	464	
Rainbow trout	309	53	
Total	2,149	517	
McKenzie Creek			Lowry 1971
Brown trout	1,546	212	
Brook trout	22	3	
Total	1,568	215	
Emmons Creek			Avery and Hunt 1981
Brown trout	2,500	238	
Radley Creek			Avery and Hunt 1981
Brown trout	2,320	236	
South Branch Wedde Creek			Avery and Hunt 1981
Brown trout	1,990	163	
MeCan River			Avery and Hunt 1981
Brown trout	1,270	156	
Sidney Creek			Thuemler 1976
Brown trout	1,104	25	
Brook trout	881	34	
Total	1,985	59	

I do not believe the trout stocks in the North Branch of the Pike were being overexploited by anglers. The standing crop of both species of trout in the North Branch of the Pike remained level from one year to the next. Also, the size structure of the trout was as good if not better than that in most other streams in the area.

MANAGEMENT IMPLICATIONS

The North Branch of the Pike River is one of the state's wild rivers, as designated by legislative mandate in 1965. This designation ensured that the Pike would receive special management by the Department of Natural Resources (DNR) to preserve, protect and enhance its natural beauty.

Past management has included biological survey work on the North Branch and its feeders in 1967, 1970 and 1971, as well as annual fish stocking of brook, brown and rainbow trout from 1943-1968. Surveys in the early 1970's showed that trout stocking actually depressed the native trout population in the North Branch. As a result, the entire North Branch was classified as a Class I trout water and all stocking was terminated.

The DNR also has an active land acquisition program on the North Branch of the Pike River and eventually would like to have all frontage along this river open to the public.

A master plan for the management of the entire Pike River System is currently being written. The results of this creel census will be useful in writing this plan. The creel census reveals the demographics of the people using the Pike River, the amount of use it receives, and how this use affects the fishery resource.

Based on the results of this study, I believe the Pike is being properly managed as a Class I trout stream and would not recommend any stocking. It is apparent that the stream provides an excellent trout fishery in terms of both quantity and quality for a good number of anglers.

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